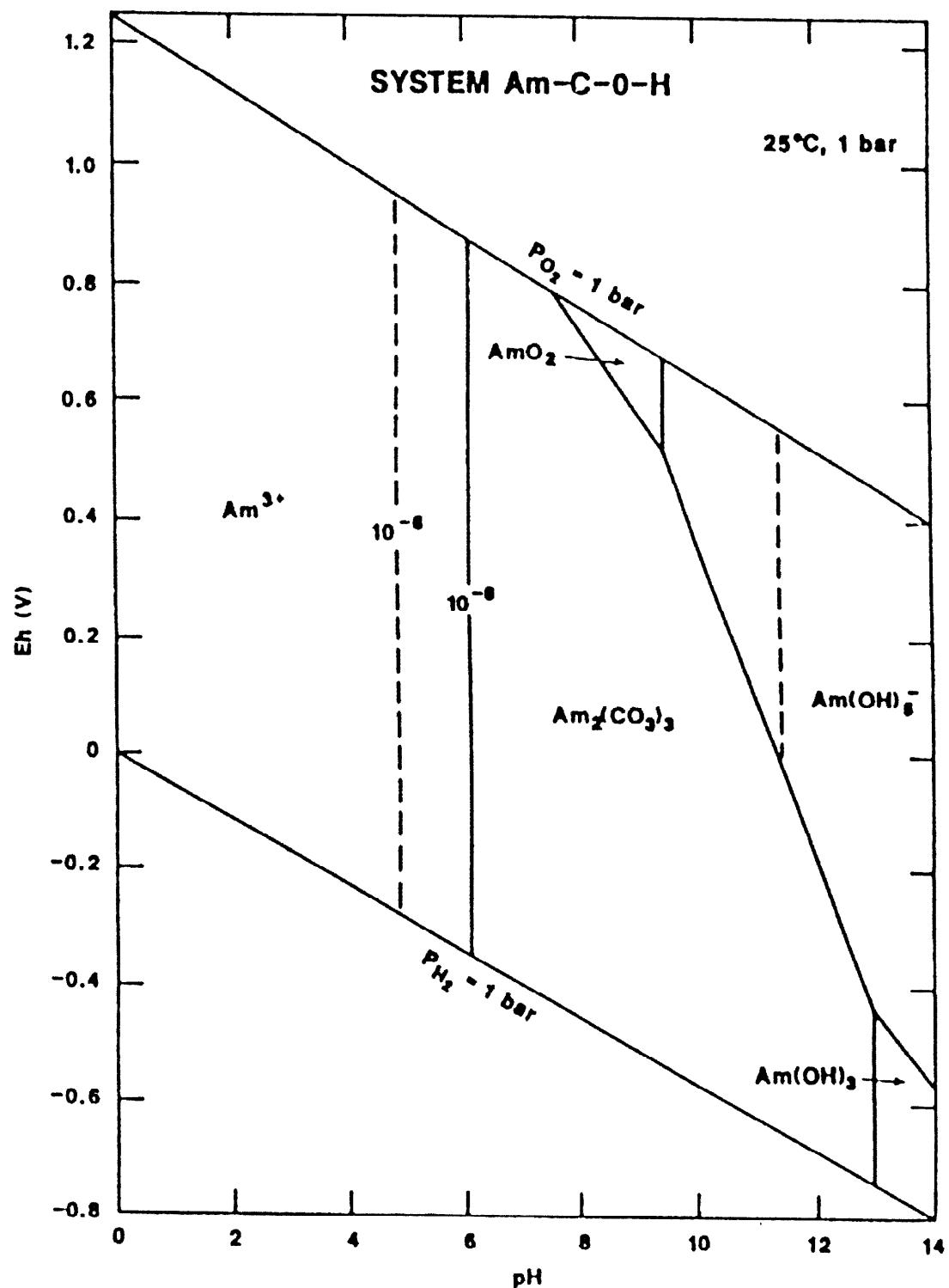


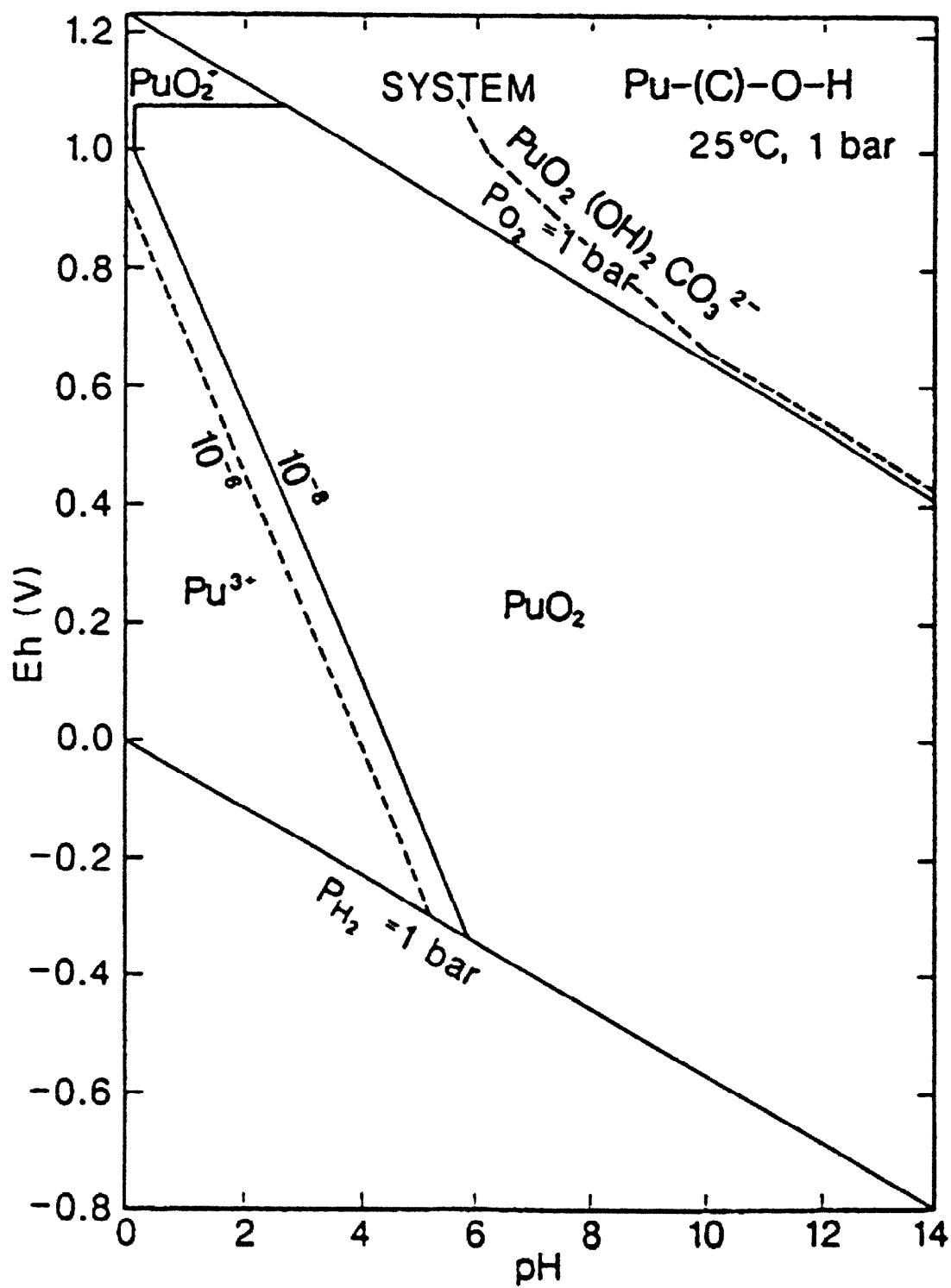
APPENDICES

APPENDIX A

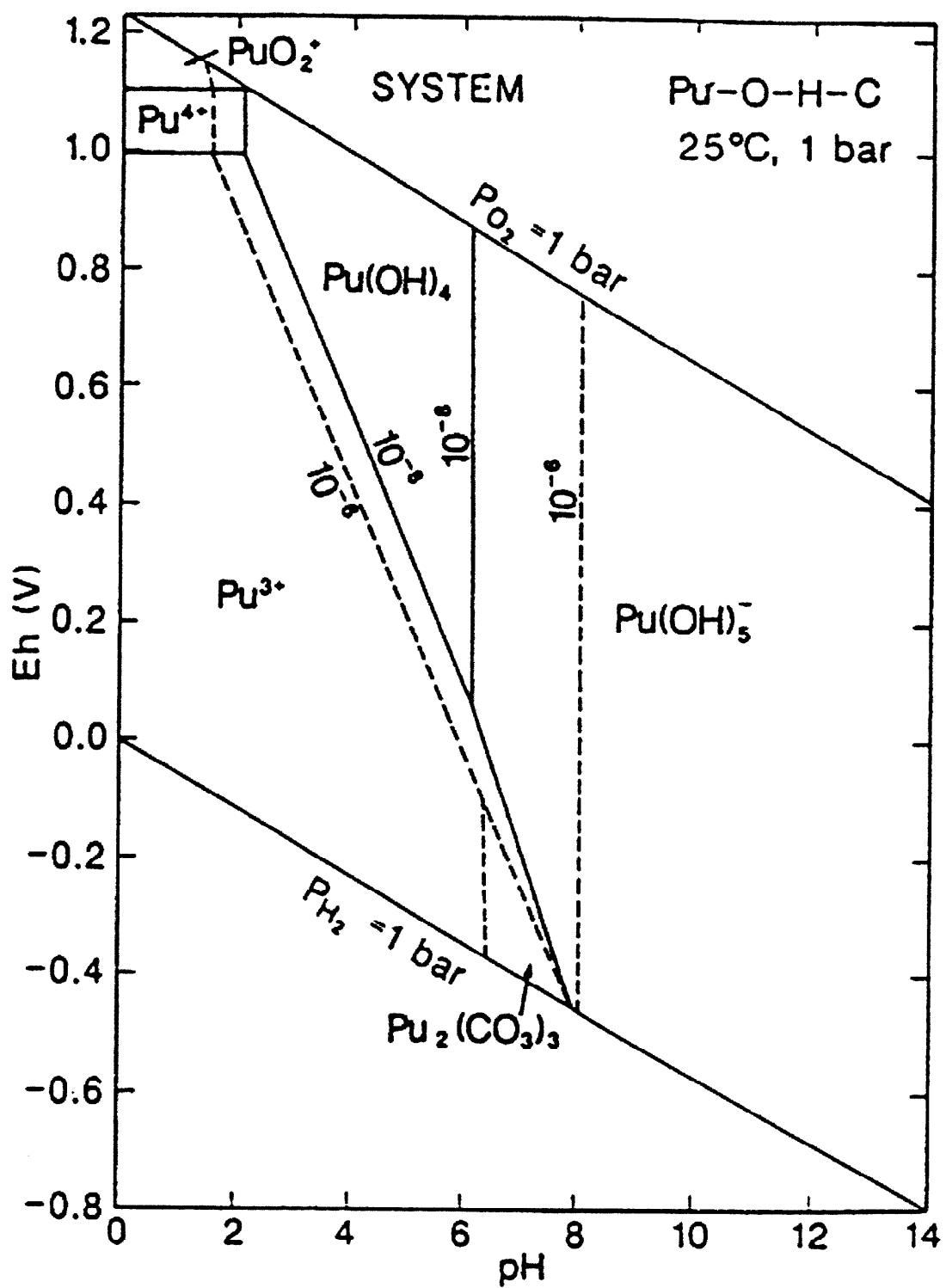
E_H .pH Diagrams



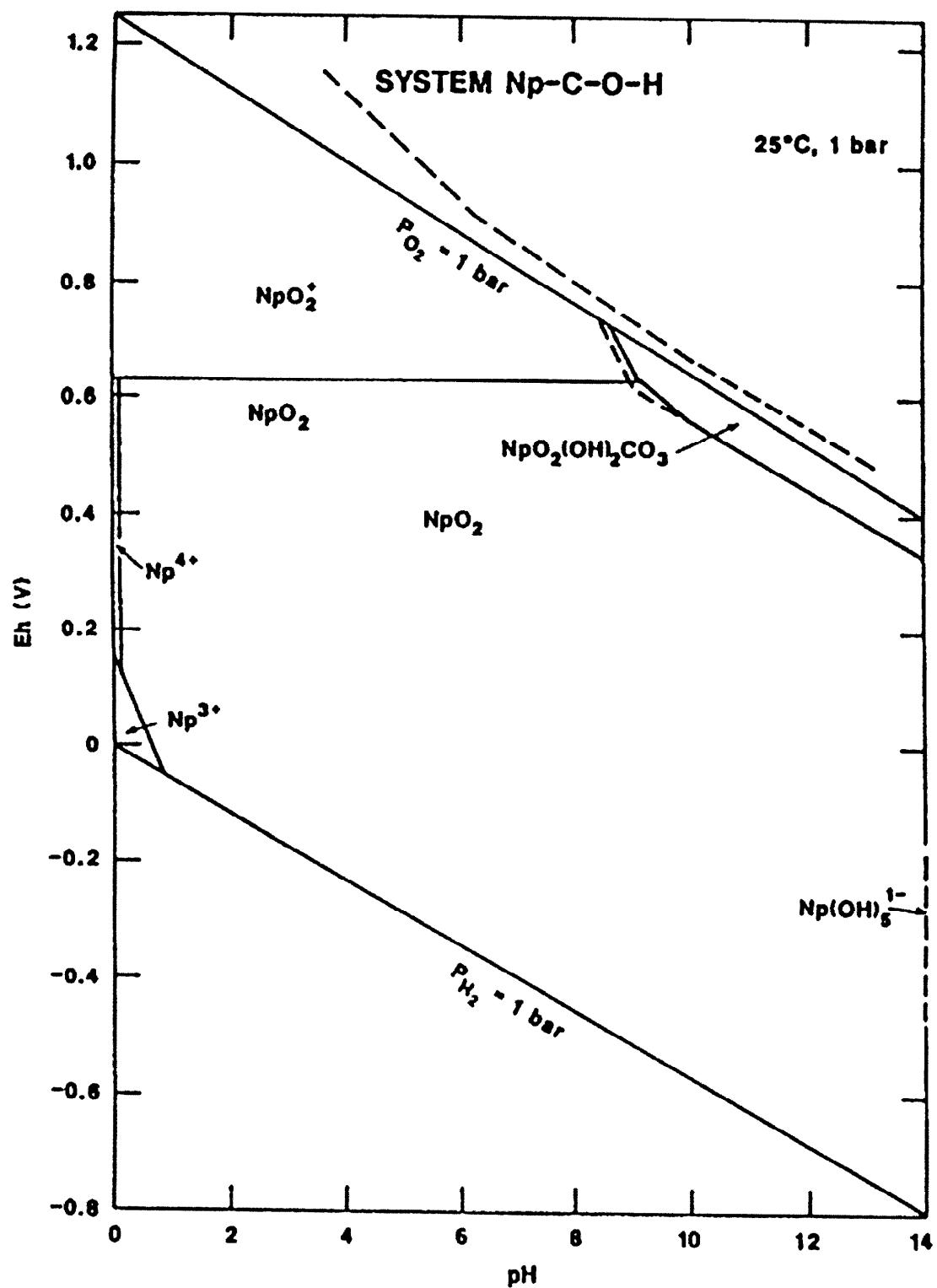
A-1 Am-C-O-H System



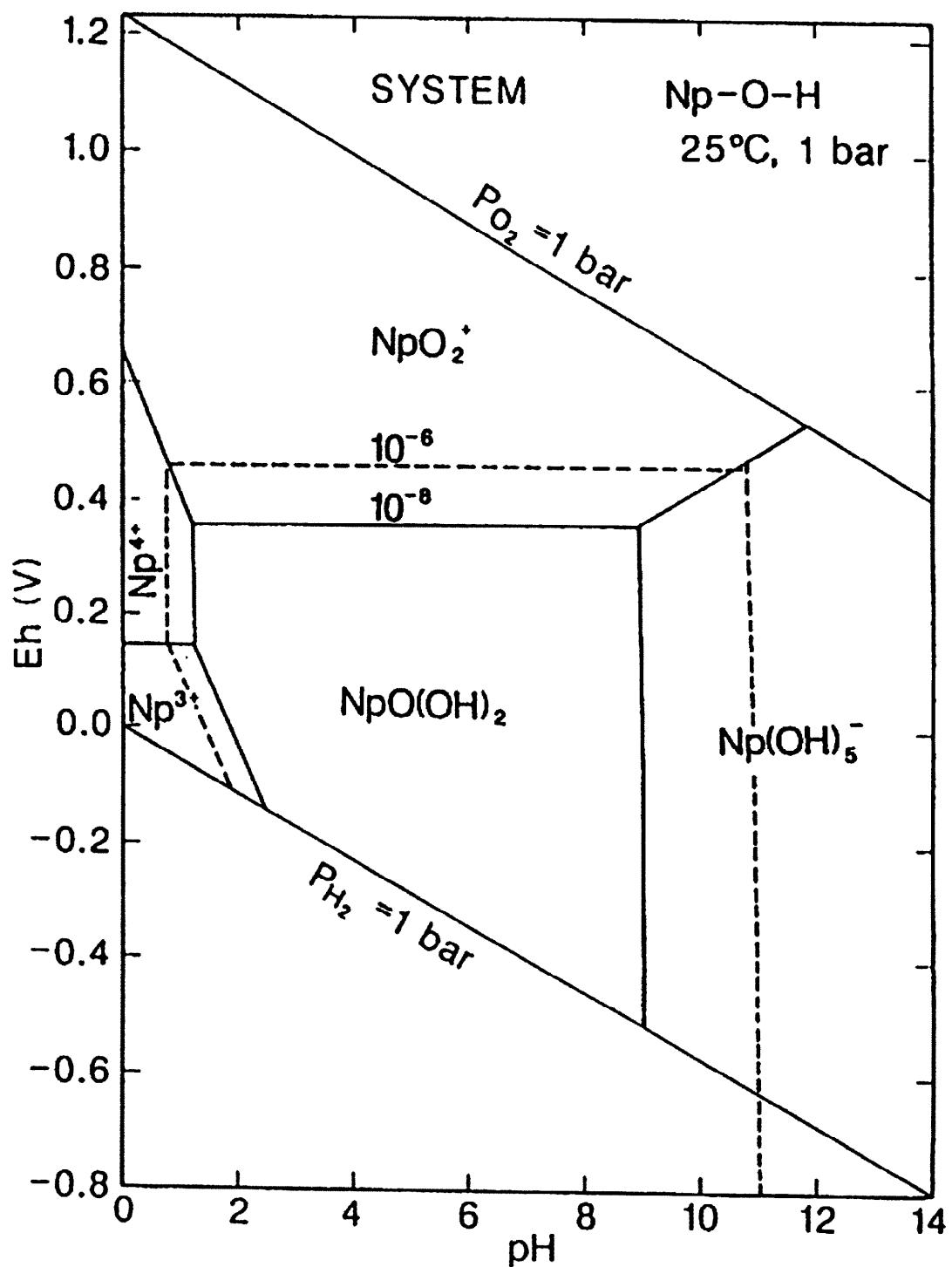
A-2 $\text{Pu}-(\text{C})-\text{O}-\text{H}$ System



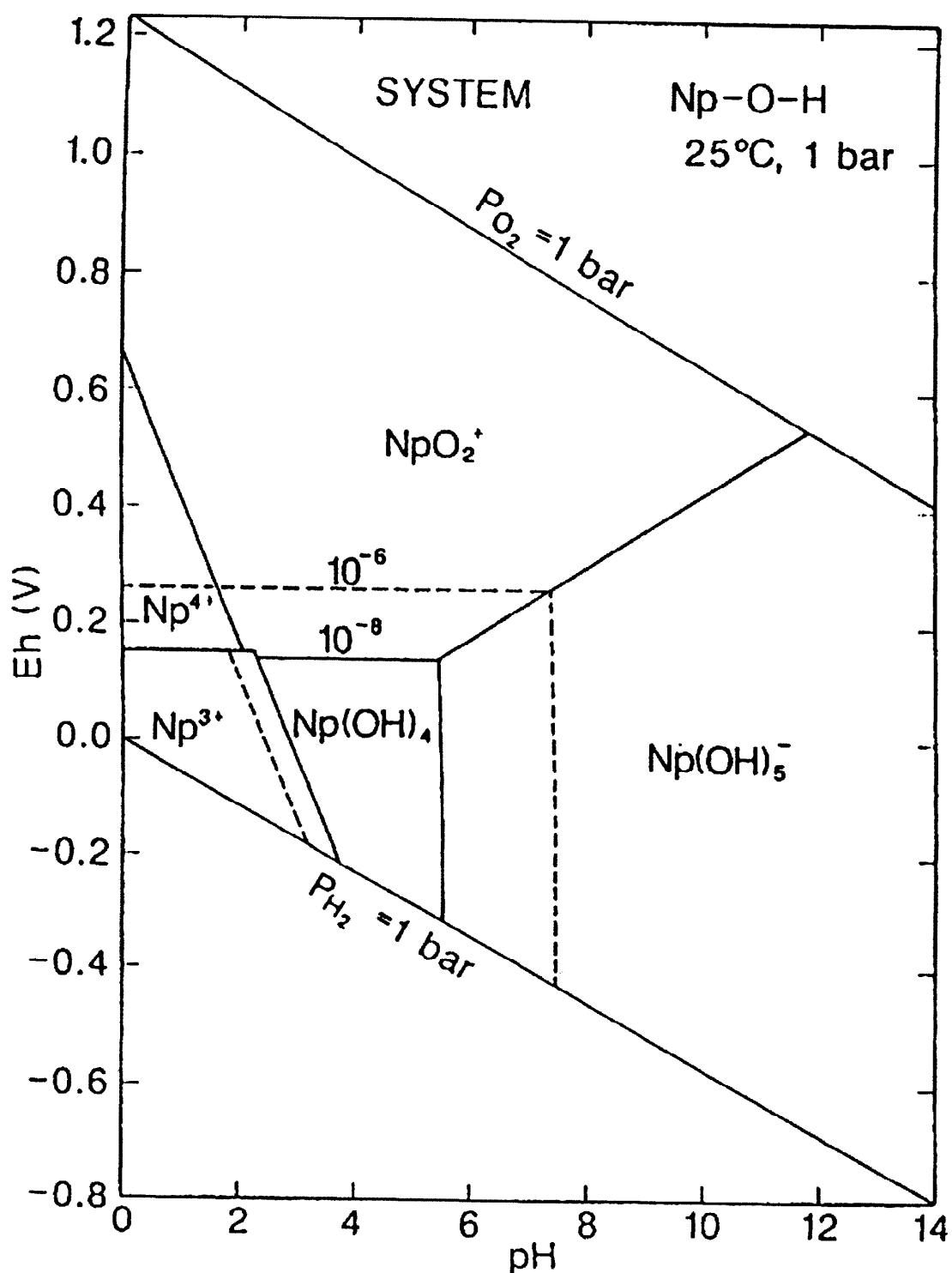
A-3 Pu-O-H-C System



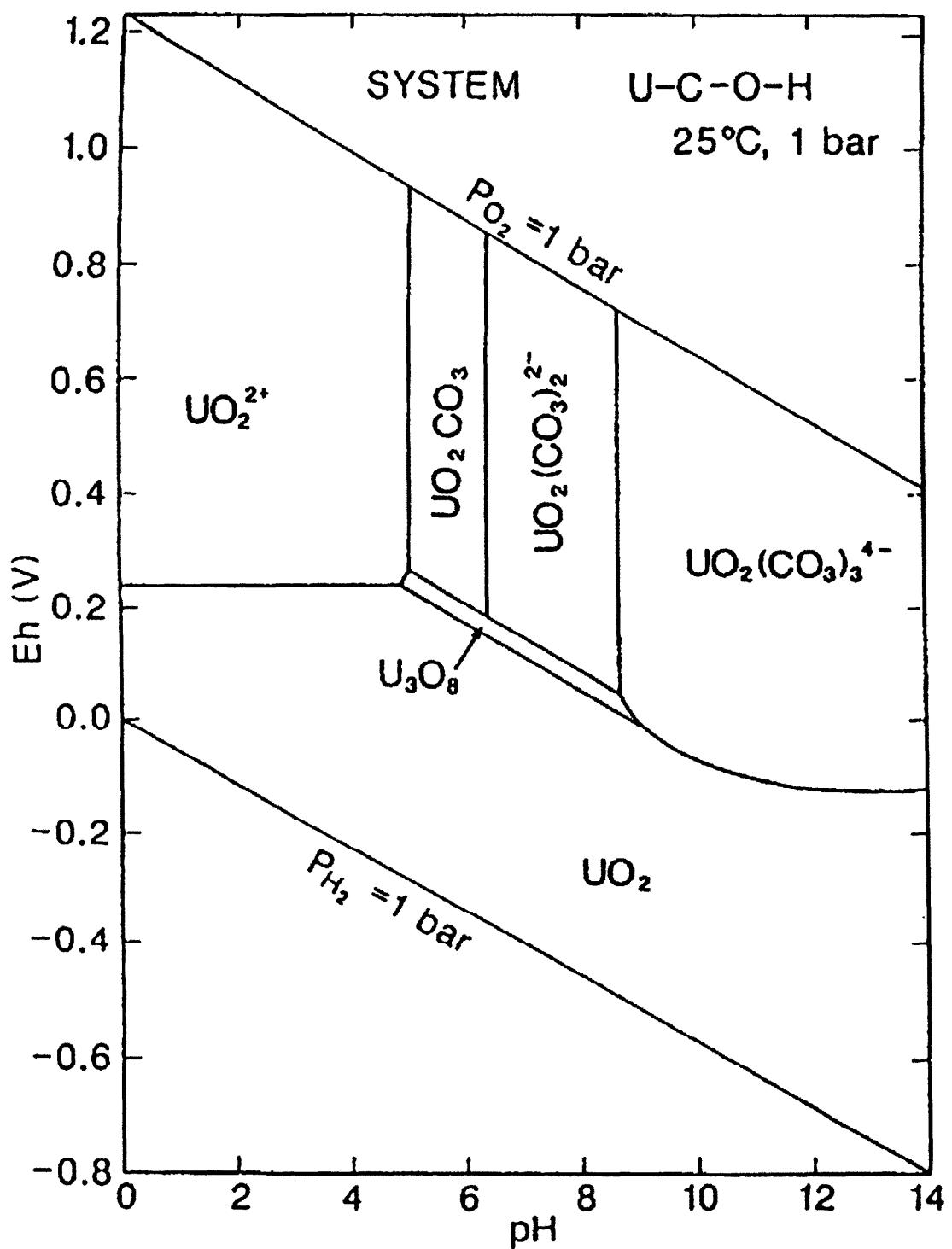
A-4 Np-C-O-H System



A-5 Np-O-H System



A-6 Np-O-H System



A-7 U-C-O-H System

1.2
1.0
0.8
0.6
0.4
0.2
0.0

SYSTEM U-Si-C-O-H
25°C, 1 bar

Eh (V)

10^{-1}
 $10^{-3.5}$

UO_2^{2+}

UO_2CO_3

$\text{UO}_2(\text{CO}_3)_2^{2-}$

$\text{UO}_2(\text{CO}_3)_3^{4-}$

$P_{\text{O}_2} = 1 \text{ bar}$

$P_{\text{H}_2} = 1 \text{ bar}$

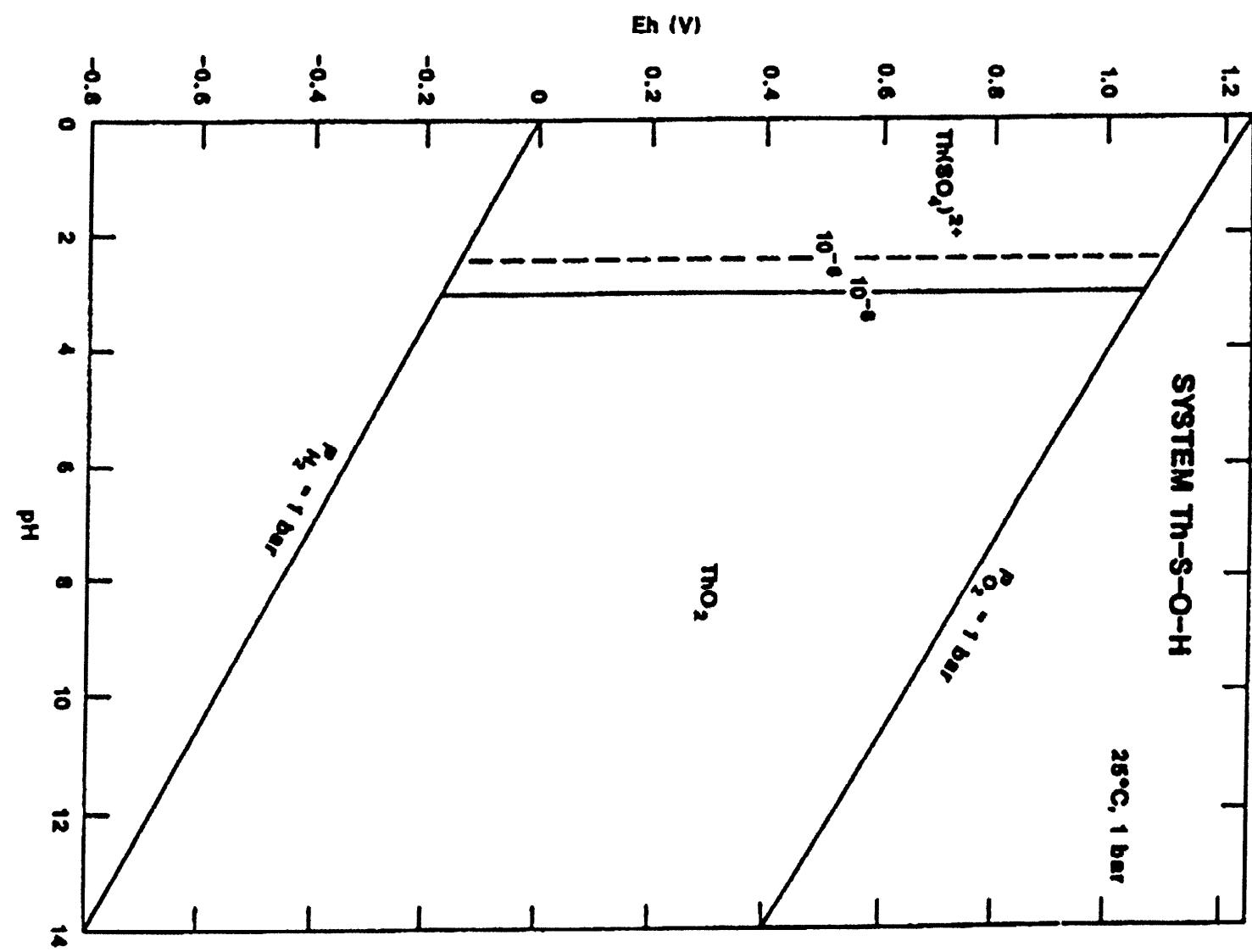
USiO_4

U(OH)_5^-

-0.8
0
2
4
6
8
10
12
14

A-8 U-Si-C-O-H System

A-9 Th-S-O-H System



APPENDIX B

Detailed Physical and Chemical Description of the Sedimentary Interbed

Table B-1. Particle Size Distribution for the M6S and M7S Borehole Samples Used in Experiments.
The interbed is composited from M6S and M7S boreholes.

Location Depth Texture		M6S 166-176 Coarse Sand	M6S 0-386 Loamy Coarse Sand	M6S 322-338 Silt Loam	M7S 213-214 Loamy Coarse Sand	M7S 329-330 Silt Loam	Interbed Composite Sandy Loam	
	mm	%	%	%	%	%	%	
Large	>2	12.7	33.8		38.6	9.4	16.7	
	1.0-2.0	13.9	16.8	1.6	17.3	1.9	12.2	
	0.5-1	12.9	12.4	3.1	9.8	1.8	12.2	
	%Sand	.25-.5	29.4	14.7	3.6	10.9	2.5	15.5
		.1-.25	27.6	26.9	3.9	9.4	10.2	20.9
Small	.05-.1	6.5	13.3	10	27.6	25.3	12.9	
	(% Total)		90.3	84.1	22.2	75	41.7	73.7
	% Silt	.002-.05	7.8	13.6	59.5	22.2	53.4	22.4
	% Clay	<.002	2	2.3	18.3	2.7	4.9	3.9
	(% Total Small)		100.1	100	100	99.9	100	100
		% Sand + % Silt + % Clay = 100						

Table B-2. Extractable Mn and Free Fe Oxides for Interbed Samples

Sample	Depth	Extractable Mn (ppm)	DCB ^a Extractable Fe (as % of Fe ₂ O ₃)
M6S	166-176	0.7	1.09
M6S	386	0.7	1.37
M6S	322-338	3.0	1.37
M7S	213-214	0.2	1.14
M7S	329-330	0.3	2.86 ^b
Interbed	Composite	1.9	1.77

^a DCB=Dithionite-Citrate Buffer Extractable Iron

^b sample was still reddish in color after the DCB treatment, which indicates that free iron oxide removal may have been incomplete.

Table B-3. Chemical Analyses for the M6S and M7S Borehole and Composite Interbed Samples Used in Experiments*
 The Interbed is Composed from M6S and M7S Boreholes.

Location	Depth	Extractable Bases				CEC	CEC	ECEC	pH
		Ca	Mg	K	Na				
	ft.	meq/100g	meq/100g	meq/100g	meq/100g			meq/100g	
M6S	166-177	11.15	1.66	0.68	1.85	15.34	4.1	15.34	8.4
M6S	386	4	1.33	0.57	1.2	7.1	3.3	7.1	9.3
M6S	322-338	17.7	6.06	1.4	1.42	26.58	20.3	26.58	7.1
M7S	213-214	1.5	0.42	0.57	0.73	3.22	5.7	3.22	9
M7S	329-330	10.5	2.82	1.14	0.82	15.28	12.5	15.28	7.7
Interbed	Composite	14.1	1.66	0.73	0.9	17.39	4.6	17.39	8.7
<hr/>									
		Base sat							
Location	Extractable acidity	Sum Cations	Extractable Al	Al saturation					
					%	meq/100g			
M6S	0	100	0	0					
M6S	0	100	0	0					
M6S	0	100	0	0					
M7S	0	100	0	0					
M7S	0	100	0	0					
Interbed	0	100	0	0					

* Samples collected on 5/24/93.